

In re Patent Application of
PRASKY et al.
Serial No. POU920030065US1
Filed: 03/25/2004
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REMARKS

The Examiner is thanked for the thorough examination of the present application. Claims 1-8 and 10 remain in this application. Independent claim 1 has been amended to correct a typographical error and to help obviate the 35 USC § 112 rejections. Additionally, claims 9 and 11-30 have been canceled to advance prosecution and without prejudice to Applicants' right to file a continuation application directed to the subject matter thereof.

Correction of the Office Action Summary form dated December 24, 2008 is requested to properly note that the Office Action is a non-final action as correctly noted on PAIR. The Applicants note that MPEP 706.07(b) states, "it would not be proper to make final a first Office Action in a continuing or substitute application or an RCE where that application contains material which was presented in the earlier application after final rejection or closing of prosecution but was denied entry because (A) new issues were raised that required further consideration and/or search, or (B) the issue of new matter was raised. As a result, a first final Office Action would be improper in view of the Advisory Action dated October 21, 2008.

The patentability of the claims is discussed in greater detail below. Favorable reconsideration is respectfully requested.

I. Claims 1-8, and 10 are Patentable in View of 35 USC § 112

A. Written Description Rejection

The amendment of claim 1 obviates the written description rejection in conjunction with the following argument. Support for a branch history table ("BHT") as presently claimed begins in paragraph [0007] on page 2 of the specification and continues throughout the specification. Also, the branch address **210** illustrated in FIG. 2 is being carried by the "branch history table and branch target buffer", e.g. BHT/BTB **200**, as disclosed in paragraph [0026], on page 7 and/or in paragraph [0030], on page 8, for instance.

In view of the foregoing, the Examiner's contention that "...Branch History table (BHT)...and Branch Target Buffer (BTB) appear to be consistent with the common usage of the terms, where a prediction of taken or not taken is in the BHT, and the addresses are in the BTB" is obviously incorrect with regards to the addresses being in the BTB since the BHT/BTB **200** carries such. The Examiner is correct that the terms BHT and BTB are consistent with their common usage, which further supports the Applicants' position that at some point in time, the BHT/BTB **200** illustrated in FIG. 2 has the branch address necessary to perform the branch predictive functions disclosed in the specification.

B. Enablement Requirement Rejection

The Examiner incorrectly contends that "one of ordinary skill in the art would not be capable of making or using a BHT which can hold an address without undo experimentation, as neither the common usage, nor definition in the specification of the BHT permits allowing it to hold an address" because such is counter to the description provided in the specification. However, in

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paragraph [0007], on page 2, the specification states, "the BHT facilitates direction prediction of a branch based on the past behavior of the direction the branch previously went". In other words, the BHT has the address in question at some point in time or it could never align such with past behavior of the address in question. Consequently, one skilled in the art would have no trouble implementing the BHT as described in the specification and in view of the illustrations.

II. Claims 1-8, and 10 are Patentable

The Examiner rejected independent claim 1 as unpatentable over U.S. Patent No. 6,125,444 to Check et al. ("Check") in view of Patterson et al. ("Patterson"). The Examiner notes the following:

"Check teaches a method operating a computer having a pipelined processor, comprising setting a bit within an instruction text field of a branch, but fails to teach said bit preventing the branch address from being placed into a branch history table buffer and a branch target buffer to thereby prevent the branch from being written into the branch history table buffer and branch target buffer and preventing the branch from being predicted and to make the branch only detectable at the time frame of decode".

To compensate for the deficiencies of Check, the Examiner then notes Patterson discloses that to further increase the performance of branches, a "branch target buffer" is often used, so that the target address can be calculated in the fetch stage, instead of the decode stage. The Examiner also notes that Patterson discloses the branch target buffer relies

on having a prediction in order to determine the correct address.

In contrast, independent claim 1, for example, recites "the bit preventing the branch address from being placed into a branch history table buffer and a branch target buffer to thereby prevent the branch from being written into the branch history table buffer and branch target buffer and preventing the branch from being predicted and to make the branch only detectable at the time frame of decode". The claimed decode **100** time frame is illustrated in FIG. 1 and described in paragraph [0027]. The cache access **120** appears two stages later and is the equivalent of the Examiner's fetch stage. In other words, the claimed BTB performs claimed functions at a claimed time based upon a claimed bit all of which Check and Patterson fail to disclose. In the alternative, the Examiner's hypothesized combination expressly teaches away from the claimed subject matter due to the requirement expressed by the Examiner that Patterson calculates the target address in the fetch stage, e.g. the Applicants' cache access **120** stage. As a result, the proposed combination fails as a *prima facie* case of obviousness based upon at least the two preceding arguments.

Further, the Examiner incorrectly contends the following:

"...if no prediction was able to be generated, because of a BHT being disabled, then it would have been obvious to one of ordinary skill in the art to also not use the BTB, as it would not have the data it needs to be made use of, therefore, attempting to use a BTB in this situation would not only not make sense, but would be almost guaranteed to generate erroneous output. In addition, as can be seen by

Column 2, Lines 28-31, sensitive system operations require cache control, so for the same reason Check disables the BHT, the BTB would need to not be written to as well. Given the advantage of a BTB as disclosed by Patterson, and the need to implement it in the system as disclosed by Check, one of ordinary skill in the art at the time the invention was made would have been motivated to include a BTB, and also to disable its use when the BHT was disabled, as the entire branch prediction mechanism must be disabled".

The foregoing is incorrect because it ignores the case illustrated at block **411** of FIG. 4 and discussed in paragraph [0031] of when a branch is decoded for the first time, and it cannot be a predicted branch as a branch must have been reached in a prior time frame such that it can be predicted in the present/future time frame. Consequently, the hypothesis that the function of the BTB must be disabled when the BHT is disabled fails as a reason supporting a *prima facie* case of obviousness.

Accordingly, it is submitted that independent claim 1 is patentable over the prior art. Its respective dependent claims, which recite yet further distinguishing features, are also patentable over the prior art and require no further discussion herein.

V. CONCLUSIONS

In view of the forgoing remarks, it is respectfully submitted that this case is now in condition for allowance and such action is respectfully requested. If any points remain at issue that the Examiner feels could best be resolved by a telephone interview, the Examiner is urged to contact the attorney below.

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No fee is believed due with this Amendment, however, should a fee be required please charge Deposit Account 09-0463. Should any extensions of time be required, please consider this a petition thereof and charge Deposit Account 09-0463 the required fee.

Respectfully submitted,

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